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Countering Naval Guerrilla Warfare: Are Convoys Obsolete?

A Monograph
by

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This monograph identifies the impact that naval theorists such Mahan and Corbett had on the United States' readiness to counter commerce raiding. It also discusses the evolution of the object of naval warfare from one dedicated to protecting shipping to that of protecting sea lanes. The Battle of the Atlantic and the escort operation in the Persian Gulf provide examples. A model is formed which helps to determine if convoys should or should not be used in future conflicts.

Finally, theory, history and the analytical model are synthesized to develop an answer to the question "Are convoys obsolete?" Conclusions and implications for future operations are derived from this analysis.

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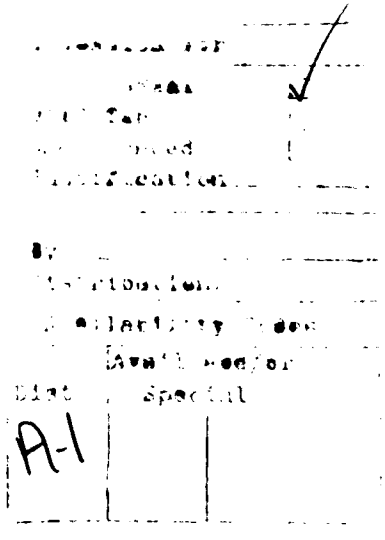

ABSTRACT

COUNTERING NAVAL GUERRILLA WARFARE: ARE CONVOYS OBSOLETE? by LCDR Jonathan T. James, U.S. Navy, 53 pages.

This monograph examines the role of convoys to protect merchant shipping. Convoys have been a major ingredient to success in two world wars. They have also been successful in protecting shipping in modern contingency operations. Future force reductions, however, may have a significant impact on the Navy's ability to conduct convoy operations.

This monograph identifies the impact that naval theorists such as Mahan and Corbett had on the United States' readiness to counter commerce raiding. It also discusses the evolution of the object of naval warfare from one dedicated to protecting shipping to that of protecting sea lanes. The Battle of the Atlantic provides insight to what extent the allies had to adapt their strategies to protect commerce. The escort operation in the Persian Gulf in the Eighties provides an example of how convoys can work in today's environment. A model is formed which helps to determine if convoys should or should not be used in future conflicts.

Finally, theory, history and the analytical model are synthesized to develop an answer to the question "Are convoys obsolete?" Conclusions and implications for future operations are derived from this analysis.

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SECTION I

INTRODUCTION

> All the world knows, gentlemen, that we are building a new navy.... Well, when we get our navy, what are we going to do with it?[1]
>
> Alfred Thayer Mahan

When CAPT Mahan made this remark to the 1892 graduating class of the Naval War College, the U.S. Navy was facing an unprecedented peacetime expansion. This expansion was eventually to result in the U.S. Navy developing a sea going battlefleet. This was a significant change from traditional American naval thinking, which was that a navy was for coastal defense and commerce raiding. Under the influence of the Naval War College, and in particular its president Alfred T. Mahan, the trend in U.S. naval policy was towards massive fleets dominated by the battleship.[2]

Today's Navy is also undergoing a change, albeit in a different direction. The 1980's goal of a 600 ship navy, designed to counter the Soviet threat, was never accomplished.[3] Today the popular perception is that the Soviet threat has gone away, and with it the need for a large American battlefleet. Future budget cuts are certain to reduce the size of the Navy. The structure of the new fleet, as well as its maritime policy, will be determined by the Navy's perceived mission.

The Navy is tasked to organize, train, and equip naval forces for combat at sea.[4] Naval planners try to match objectives (ENDS), the resources available (MEANS), and the missions and functions of the Navy (WAYS). For this analysis, command of the seas is the ENDS. The fleet is the MEANS. The question before us is the WAYS: how should the fleet be used to gain command of the seas?

Before we continue, we must first establish what is meant by the term "command of the seas." Thucydides called it the "power which the sea confers upon him who knows how to conquer and to use it."[5] To acquire command of the seas requires more than a powerful navy; it also requires the will to use that navy. Command of the seas means a maritime nation possessing this power can control the flow of trade, communications, and military might across the oceans. This is key to understanding the difference between land and sea warfare. Unlike on land, the sea cannot be seized or held by military force. The value of the sea lies in its use for the passage of both commercial and military forces. In land warfare the objective is to seize territory. The objective of naval warfare is the control of the sea lanes.[6]

The challenge facing the U.S. Navy is how to gain and maintain command of the seas. Since World War II the U.S. Navy has maintained its dominant

status at sea primarily by virtue of its carrier battle groups. These are the foundations of the battle fleets designed to counter the Soviet threat, and as we shall see later are the legacy of Mahan.

Carrier battle groups, however, are only one means of gaining command of the seas. An alternate strategy, dating back to antiquity, is guerre de course, or as it might also be called, "guerrilla war at sea."[7] This is more commonly referred to today as commerce raiding, privateering, or pirating, depending upon your point of view.

The intent of this research paper is to determine how the U.S. Navy can best counter the threat of commerce raiders. The forces and tactics used in countering a guerre de course campaign would be as different from fleet tactics as the tactics of a decisive ground battle are from a guerrilla campaign.[8] The historic choice has been to protect merchants through convoys. Providing the ships with escorts has been a successful method since the early days of sail, and has been used several times this century. Today, however, the warships, merchants and the commerce raiders themselves are different from their ancestors. Are convoys still relevant today? Are they still the correct defense against guerre de course?

To begin answering these questions, we will examine the naval theory behind guerre de course so we can understand its application as well as the defense against it. Sea denial is a possible naval strategy for an inferior navy. Command of the sea may not be necessary so long as it can also be denied to one's enemy.[9] It is wrong to assume that if one fleet loses the command of the seas it automatically passes to its opponent.[10] It is possible that the U.S. Navy may face an opponent whose goal is to deny the command of the seas to the United States, and not necessarily to gain it for itself.

The evolution of the U.S. Navy from a minor force to the world's greatest sea power can be traced in part by examining the impact of naval theorists such as Alfred T. Mahan and Julian Corbett on the structure and doctrine of the Navy. The question remains whether they had an influence on the Navy's ability to counter and defeat guerre de course in the Twentieth Century. From these analyses, the future of convoy operations can be analyzed by determining their feasibility, suitability, and the level of risk involved. Then the question whether convoys are still relevant today and in the future can be answered.

SECTION II

THEORY

For over a century since its beginning as a republic, the United States had viewed the role for its navy as one of coastal defense and commerce raiding. The American Navy was dwarfed by that of Great Britain, while the focus of American expansion was continental. Thus the United States Navy consisted of several sailing frigates, complemented in wartime by numerous privateers dedicated to disrupting their opponent's economy by attacking enemy merchant ships. This was the maritime strategy of the United States during the Revolution and the War of 1812. This strategy was copied by the Confederacy during the American Civil War, while the Union developed a Navy for blockade and joint operations with the Army. After the Civil War the American Navy reverted back to a group of small ships dedicated once again to coastal defense and commerce raiding.[11]

This was in accordance with the current prevailing wisdom. The British Royal Navy ruled the seas in the nineteenth century; all other navies were smaller. Naval theorists on the European continent had struggled with the problem of how to counter Britain's sea power. Adding to their difficulties was that the continental countries, as well as America, considered naval forces as only a branch of the

military establishment, suitable only for protecting shipping (through convoys or patrolling specific trade routes for commerce raiders) and repelling invasion. Only Britain used its navy as a separate force to control the seas.

The French in particular had led the way to produce a naval strategy to counter British maritime supremacy. They had a long tradition of using commerce raiders in the wars with Britain in the Eighteenth Century. The development of steam propulsion and new naval weapons, including the torpedo, would add a new credibility to commerce raiding theories.[12] Led by the Jeune Ecole of the French Navy, small and fast patrol boats became the new weapon to challenge British supremacy on the seas. These boats had the attractive quality of being relatively inexpensive, yet still capable of possibly defeating the dreadnoughts. This school of thought made an inferior fleet a virtue rather than a fault. A cheap, affordable and easily replaceable navy that could challenge a superior fleet was very attractive. Its target would be the lifeblood of a maritime nation such as Great Britain: its sea trade. Guerre de course, or commerce raiding, would create an economic panic and cause the enemy to sue for peace. The enemy's battlefleet would be irrelevant, since it would have no opposing fleet with which to battle.

The same small boats used for guerre de course could also be diverted to a coastal defense role, supported by coastal artillery. This was the naval strategy of the United States in the early nineteenth century.

During the latter half of the Nineteenth Century the American Navy developed its Naval War College and started the Naval Institute. This was the beginning of a reevaluation of the current naval strategy.[13] A key player in this reevaluation was the second president of the Naval War College, CAPT Alfred Thayer Mahan, USN. During his study of history he noted the impact sea power had upon critical events, especially in war. A series of lectures he gave to the War College resulted in his book, The Influence of Sea Power upon History, 1660-1783, followed by a sequel covering the years 1783 to 1815. Using Great Britain as his model of a great nation, he developed the theory that a nation with a great battle fleet, combined with the proper geographic position, could gain control of the seas and thereby ensure its position as a major power. The nation's battle fleet would destroy its opponent's fleet in a decisive battle, or neutralize it through blockade.[14]

Mahan's theory directly contradicted the theories of the Jeune Ecole and the current American naval strategy. Instead of a navy used only for coastal defense and shipping protection, Mahan saw

seapower as an instrument of national policy and power. The current American navy could not act as this instrument; a new, bigger navy was required. He wrote:

> It is not the taking of individual ships or convoys, be they few or many, that strikes down the money power of a nation; it is the possession of that overbearing power on the sea which drives the enemy's flag from it, or allows it to appear only as a fugitive; and which, by controlling the great common, closes the highways by which commerce moves to and fro from the enemy's shores. This overbearing power can only be exercised by great navies.[15]

Mahan pointed out that during the French Revolution and the Napoleonic War, the French strategy of guerre de course failed to defeat the British. It was decisive fleet actions such as Trafalgar and the Nile which enabled the British to control the oceans by destroying the enemy fleets.

As for the role of the American Navy in defending American shores, Mahan distinguished between political defense and military defense. The political meaning of defense meant that the United States would use it only if forced into war. Military defense meant giving up the initiative and waiting for the enemy to attack at his leisure. Mahan considered military defense as not being the proper role for the Navy; the Navy should consist of a major fleet of battleships that was numerically and qualitatively superior to any other fleet. Such a fleet would

command the seas and thereby provide for the defense of the nation.[16] It is important to understand for this analysis that the U.S. Navy in the twentieth century would consider convoys a defensive measure.[17]

Mahan's works fell on receptive ears. The late 1800's and early 1900's saw unprecedented naval expansion in the United States, Germany, and Japan. The British embraced Mahan for his assessment of their naval power and for validating their use of the Royal Navy. Eventually, the United States became a dominant naval power in its own right, and today is the dominant naval power in the world. Though Mahan's beloved battleships have given way to the massive aircraft carriers, his concept of controlling the seas with big fleets is still with us today.

Mahan's concept of a big American battlefleet replacing the commerce raiding cruisers changed the emphasis of American naval policy. Mahan recognized that control of maritime commerce through command of the seas is the primary function of the navy. But he expected command of the sea to be gained by fleet battles which would drive the enemy from the sea. He felt that commerce raiding itself was not sufficient to crush an enemy, though he acknowledged that it could harass and interfere with its trade.[18] Mahan's fixation on the decisive battle between fleets

and his aversion to guerre de course led to the United States Navy being unprepared to counter commerce raiding in World War II.[19] The emergence of the submarine was a serious argument in favor of guerre de course. Failure to recognize guerre de course as a possible course of action would also result in the failure to recognize the need to plan to defend against it. Offensive action against the enemy, and not defensive convoys, was considered the appropriate action by U.S. Navy officers taught by Mahan.

Sir Julian Corbett had a different approach to naval theory than Mahan. Having studied Clausewitz, Corbett saw that maritime war could be both limited and unlimited.[20] An unlimited war would require the complete destruction or neutralization of the enemy fleet, as Mahan would also have it. Unlike Mahan, however, Corbett saw the possibility of a limited maritime war, where complete destruction was unnecessary. A belligerent would only have to set the conditions that it would cost his opponent more to win than it would be worth. Commerce raiding could easily fall within the parameters of either limited or unlimited war, depending on the means available. In any case it is a legitimate alternative approach to gaining command of the seas without a big fleet.

Corbett also defined the object of naval warfare differently from Mahan. To him, the object

was to gain, either directly or indirectly, the command of the seas or to prevent the enemy from securing it.[21] This last is a key difference between Mahan and Corbett. It is wrong to assume that command of the seas automatically passes from one belligerent to another. It is quite possible for neither side to control the seas; this may be quite enough for a country with an inferior navy. Capture or destruction of enemy property can put pressure upon him to sue for peace, so long as the pressure was severe enough to be crippling to his economy. Commerce and finance has had an increasing role in determining national policies.[22] The inferior sea power cannot hope to acquire control of the seas. But it can severely hurt the enemy through commerce raiding.

Traditionally, the Royal Navy always believed that the only way to secure command of the seas was to obtain a decisive battle against the enemy's fleet.[23] However, Corbett showed that this was done in order to enable cruisers to continue in their work in protecting the sea lines of communications, recognizing that a decisive battle would not necessarily mean that merchant ships would still be secure.

Mahan and Corbett viewed commerce raiding differently in their respective theories. Mahan

discarded the notion that commerce raiding was a useful strategy for a nation. Though this had been the naval policy of the United States since its inception, he believed that it was not a correct policy for a nation that was striving to be a world power. His historical example of the wars between France and Great Britain seemed to corroborate his theories. His theories, based upon his historical examples, showed that sea power in the form of mighty battle fleets was vital to be a world power. Corbett, on the other hand, clearly saw that commerce raiding was one possible strategy for a nation. He did have the benefit of writing after Mahan, and was able to see the effects of the submarine in World War I. His theories placed more emphasis on taking a comprehensive look at national strategies that included naval forces.

What impact did classical theorists such as Mahan and Corbett have upon the U.S. Navy's ability to counter commerce raiding? The belittling of commerce raiding as a proper naval strategy by Mahan meant that it was not even worth planning a defense against it. The U.S. Navy built a large fleet of battleships. Through decisive sea battles, the enemy would be swept from the sea, making the sea lanes secure for friendly trade. In the actual event, however, these capital ships were to be of little use against the German

submarines. It took a major change in the structure of the fleet to counter this threat. This was accomplished by building numerous small warships to serve as escorts for convoys of merchant ships. It took a great deal of money, time, and resources to effect that change. It was considered unlikely by both Mahan and Corbett that such a change would occur, as it would involve a ruinous cost to the nation.

Classical naval theory as espoused by Mahan did not include defensive measures such as convoys. It is a testimony to the professionalism of the Navy officers in charge in World War II that they could recognize the need for convoys despite their initial beliefs that command of the seas could be gained without them.[24] By the same token, it is an indictment of Mahan's theories that the U.S. Navy was unprepared for the onslaught of commerce raiding. The root of this unpreparedness was in improperly defining the objective of naval warfare.

However, in World War II the allies were going to attempt the impossible by providing absolute protection for trade across the Atlantic Ocean. Despite the antipathy of the Navy towards convoys, this was the form that was taken to protect merchants from the U-boats of the Third Reich, and much later in the Persian Gulf.

SECTION III

HISTORY

It was during the first World War that the Germans began to perfect their commerce raiding tactics and strategy, and the Royal Navy adapted to this new threat. At the beginning of the World War I, the Royal Navy had the world's largest fleet. The Germans, heavily influenced by Mahan, had invested in its High Seas Fleet which grew to the world's second largest. Its purpose was to defeat the Royal Navy.[25] Unfortunately for the Germans, they miscalculated. They expected the Royal Navy to seek them out for a decisive battle and attack them close to their bases. The German High Seas Fleet was designed for this battle. When the Royal Navy did not appear, but contented itself with merely blockading the German fleet, the entire German naval strategy failed.[26]

In 1916, the German admirals shifted over to another strategy, that of commerce raiding. Unable to move its High Seas Fleet, the German Navy turned to its submarine fleet. These U-boats were not true submarines, but could be called more accurately submersibles. They were really surface ships that had the capability of going underwater for brief periods of time.[27] They operated mainly off the coast of

Europe; their operations helped to expose one of the fallacies of Mahan's theories of sea power.

Geographical position had been one of the Mahan's six basic elements of sea power.[28] Using Great Britain as a model, Mahan pointed out that as an island straddling the major sea lanes in and out of Europe, Great Britain could control those sea lanes and become a great power. In World War I it became obvious that this position could also become a liability. All shipping to Great Britain had to follow certain obvious, and therefore predictable, routes. Great Britain was vulnerable to a campaign of commerce raiding, particularly if the commerce raiders were stealthy and difficult to stop. This exactly describes the German U-boats. However, the Germans were also affected by poor geographic position. Their fleet was restricted to operating out of the confined waters of the North Sea. It was not until the Second World War that the Germans were able to gain a superior geographic advantage over Great Britain by using French ports as the bases for their submarines.

During World War I, the U-boats were able to break out into the Atlantic. The U-boat campaign in World War I was extremely effective. From August 1914 through November 1918, 12,850,814 tons of shipping had been sunk by U-boats. Almost half of this tonnage was sunk in 1917 alone, giving credence to the shift in

German naval strategy.[29] Britain was losing command of the seas. This did not mean that Germany gained command of the seas, but rather they were disputing Britain for command. Neither side could really claim that they controlled the sea lanes. However, Britain relied upon its sea lanes for survival as an island to a greater extent than did Germany, a continental power. Therefore, the stakes were higher for Britain, and they accordingly put a lot of effort into stopping the German threat at sea.

Unable to effectively stop the U-boats by hunting them down and destroying them, the British turned to the discarded naval tradition of convoying merchant ships.[30] This was not an easily acceptable decision to make. The Royal Navy officers had forgotten the utility of convoys and had adopted a concept of offensive fleet actions along the lines of Mahan. Arguments were raised that convoys would merely gather the merchants in one spot for U-boats to attack; port facilities would be overwhelmed by the sudden appearance of twenty or more merchant ships; the slow speed of the convoys would make them tempting targets, and so on.[31]

The slow speed was the real curse of the convoys. In 1917, the standard speed was from 8.25 knots to 12 knots. Even at this slow speed there were ships unable to keep up and had to sail alone. A

U-boat capable of 15-17 knots could easily outmaneuver the merchants. The escorts could go 25-34 knots, but could not be everywhere at once. Therefore, the Admiralty made a practice of assigning six escorts for a convoy of twenty ships. This reduced the number of convoys that could be sent at one time since there was a limited number of escorts.[32]

In the actual event, however, the convoys had many advantages. Surprisingly, it became apparent that in the vast expanse of the Atlantic, it was as easy to hide twenty ships as it was to hide one. The U-boats had a dearth of targets in a suddenly "empty ocean."[33] This meant that the U-boats had to go looking for their targets, not an easy task. Plus, it brought them within range of the destroyer escorts weapons. The destroyers no longer had to search out the submarines.

It is at this point that we observe the change of the objective of naval warfare. Earlier, as per Mahan, it was firmly established that the objective of naval warfare was to gain command of the sea through the destruction of the enemy fleet. Correspondingly, when the escorts saw a submarine, they would break off from the convoy to chase it. This would leave the convoy with fewer escorts and therefore less protected. It became apparent that the true objective of convoy operations was not the destruction of the

submarine, but the timely and safe arrival of the convoy to its destination. This was difficult for naval officers to accept, both in World War I and again in World War II.[34]

The submarine had changed the face of naval warfare. Earlier convoys had protected merchant ships from corsairs and pirates sailing similar ships. Guerre de course implied capturing prizes and bringing them home for the prize money. Submarines were not capable of this. Instead of prizes, the submarines sank their targets.[35] The silent, unexpected attack of the submarine on a merchant ship added to the terror of sea warfare. The main effect was that the submarine disputed control of the sea with the Royal Navy. World War I proved that convoys would, if not actually regain command of the seas, at least neutralize the submarine threat.

Despite the historical success of the convoy, Navy officers in both the British and the American navies resisted using it. Mahan had fed their obsession with controlling the sea lanes by identifying the objective of the battle fleet as crushing the opposing flet. Over the course of the late nineteenth century and well into the twentieth, the role of the Navy had shifted from protecting commercial shipping to one of controlling the sea with battle fleets. Convoys were now considered

irrelevant, if not downright dangerous. Once a government decided to use convoys to control shipping, the current wisdom had it that it was already admitting defeat. Furthermore, convoys would so restrict trade that it would quickly transfer to neutral ships and ports. As CAPT W. H. Henderson wrote in 1887:

> As things are, at present, in any maritime war our naval strength will be frittered away in trying to protect our commerce instead of striking effective blows against the enemy.[36]

This attitude remained in effect despite the success of convoy operations in World War I. Thus, over fifty years later in 1939, Herbert Rosinski was able to echo the words of CAPT Henderson:

> ...defence of our interests, in particular our trade, through direct protection alone is not merely...inadequate; it is, above all, a fundamentally vicious strategy, in so far as it leaves the enemy the full initiative in attack, at the same time that it forces us to a fatal dispersal of our own forces.[37]

This is the attitude with which the British, and later the Americans, entered the Battle of the Atlantic in World War II.

On one side of the Battle of the Atlantic were improved German U-boats. Their mission was to strangle Britain economically and to prevent the buildup of American strength in the European Theater of Operations. There was also the threat of large

German surface raiders, such as the battleships BISMARCK and TIRPITZ, and the pocket battleships GRAF SPEE and SCHEER.

Against these, the British Royal Navy had fewer ships than in World War I. Granted, the German Navy was also smaller, but its goals were not the same as the Royal Navy's goals. The Royal Navy was expected to maintain the command of the seas with its battle fleet. The Germans, recognizing again that their naval buildup was not enough to go directly against the British fleet, settled for the more attainable goal of striking at the British economy through commerce raiding.[38] Upon realizing that they once again were in danger of losing control of the sea lanes to the commerce raiders, the British turned back to the convoy system. By December 1940, the British was losing hold of its vital supply lines in the Atlantic; the Germans were winning. From September 1939 to December 1940 almost 4 million tons of shipping had been sunk by German U-boats; over a third of this had been sunk in the North Atlantic.[39] The advantage the Germans would gain in being able to operate out of French ports was critical to their even better success later in the war.

There were several strategies proposed by different factions on how to win the Battle of the Atlantic. One was proposed by the proponents of

strategic bombing, such as Air Chief Marshall Harris of the RAF. He wanted to attack the bases and yards of the U-boats. Unfortunately this was delayed until the submarine pens had been covered with hardened concrete. The second method, proposed by the traditional maritime school, was to sink the U-boats at sea. In 1942 this was not a viable option due to lack of resources, but later it was accomplished. The third method was the convoy.[40]

The United States agreed to help with the convoy duties, even though it was not officially at war with Germany. In May 1941, three battleships, one carrier, four cruisers and two destroyer squadrons were transferred from the Pacific to the Atlantic fleet. By September 1941, the American Navy had assumed chief responsibility for convoy operations in the Western Atlantic, and were actively helping the Royal Navy to track the German submarines.[41]

This is not to say that the United States Navy fully supported convoy operations when war with Germany was declared. There were no war plans developed to protect shipping. Earlier, in 1938, new construction had been authorized for seven battleships, two carriers, nine cruisers, twenty-three destroyers and nine submarines. These were meant to help the United States maintain maritime superiority over Japan, not conduct convoy operations.[42]

The Americans had closely watched the early experience of the Canadian Navy with convoy operations. Weakly armed and poorly trained, the first convoys escorted by the Canadians suffered severe losses. This led to the American belief that it was worse to use a weak convoy than no convoy at all. The Americans initially based their trade defense on patrolled routes, anti-submarine sweeps, and independent routing of ships. Commerce was to be defended not with convoys, but by directly attacking the enemy.[43] The result was disasterous. It ignored the fact that the principle means of defending shipping in World War II was by avoiding the enemy.

Superb intelligence, coupled with selective routing of convoys, would make them virtually invisible to the U-boats. Convoy escorts constituted the last line of defense, not the first.[44] The British used anything that floated as escorts: fishing trawlers, yachts, small craft, etc. This was copied by the United States when its Coast Guard created its "Hooligan's Navy" of similar craft. Though these craft were often inadequate for the job, they were all that was available in the first months of the war.[45]

The convoy system itself was a success, but it was not a total one. In the first six months of 1941, two years after the British initiated convoys, five

million tons of shipping, along with seven million tons of supply imports and two million tons of food were destroyed. Yet at the same time, the vast majority of convoys were sailing unmolested.[46] The problem was that not every ship was able to sail in a convoy. Some were too slow to keep up. Some would have to follow routes for which there were no convoys available. While convoys themselves were successful, they could not protect all merchant shipping. To understand an inkling of the scope of the problem, in 1939, on any given day, there was an average of 2500 British ships at sea. It was the Royal Navy's task to protect them all.[47]

During the years before the war, Americans concentrated on building the larger craft in the belief that smaller ones could be quickly built later.[48] The destruction of the Pacific Fleet at Pearl Harbor imposed a further requirement for more capital ships, and a shift of Atlantic Fleet assets back to the Pacific. Later plans to build one thousand destroyer escorts were further delayed by the accellerated Landing Craft Building Program. It was now until 1943 that the American war industry produced enough assets to defeat the Germans.[49] Even so, there were several other factors involved in this victory.

There was no viable alternative to the convoy. Therefore, the United States Navy dropped its Mahanian objective of naval warfare - destruction of the enemy fleet - for the simpler one of getting the supplies across safely and in a timely manner. Later, when more ships became available, the U.S. Navy formed support groups (also called Hunter-Killer groups) to follow the convoys. Centered around a small carrier carrying Wildcat and Avenger planes, these enjoyed great success in sinking U-boats. In one 98-day period in 1943, they were responsible for sinking 16 U-boats and 8 milch cows (U-boat mother ships). In the same period only one ship out of convoys supported by these carrier groups was sunk.[50]

The commanders of these Hunter-Killer groups had discretionary ord to go ywhere there were submarines and sink them. se are the type of orders that Navy officers dream about. Given wide latitude, the Hunter-Killer groups would analyze their areas of operation and seek out the likely places that the U-boats would attack. They would use the convoys like lures, counting on their superior air and surface power, as well as their greater endurance, to defeat the U-boats before the convoys were in great danger. Thus the allies shifted from a purely defensive naval campaign using convoys to one that was much more offensively minded. It shows that the best way to end

a dispute for the command of the seas is still to remove the enemy force, even if this means defeating individual submarines instead of entire battle fleets.

In the final analysis the allies won the Battle of the Atlantic in World War II if for no other reason than they were able to continue moving supplies across the ocean to Britain. Convoys can be given most of the credit for the allied victory in the Atlantic. Other factors in the victory included the fact that the allies were able to eventually produce more than the Germans could sink. Furthermore, the U-boat menace was lessened, unbeknownst to the allies, when Hitler diverted them from the Atlantic to other spots to support Operation BARBARROSSA and the North African campaign.[51] Additionally, the high number of U-boat losses forced a withdrawal of the German submarines. However, it was the convoy that maintained the flow of supplies across the ocean in the face of a determined enemy when the massive resources at the end of the war were not yet available. The experience in the Atlantic with unescorted ships shows that without convoys Britain may not have survived long enough for the allies to develop those massive resources.

The score at the end of the war was 2575 ships sunk by U-boats, totalling over 14 million tons. They also accounted for 187 allied warships sunk. U-boats

suffered 784 losses.[52] But the bottom line was that German naval policy failed to defeat the economic power of the allies. This was a result of the German inability to defeat the convoys.

During the years following World War II the United States Navy remembered one lesson very clearly: it must remain proficient in anti-submarine warfare. This became the number one priority of the post-war Navy and has continued to be so through the Eighties. This is ironic; since World War II there have been no direct conflicts between enemy submarines and U.S. forces.[53] Yet the Maritime Strategy was focused on first containing, then destroying, the Soviet submarine fleet.[54] The Maritime Strategy had precluded the use of convoys, since the sea lanes were going to be protected by removing the threat, not providing escorts to merchant ships.

It seemed as if the hard-won lessons of two previous wars had again been forgotten. So it may have been a surprise to many Navy officers to find themselves in the Persian Gulf escorting tankers during the latter part of the 1980's. A further surprise to an ASW oriented navy was the lack of a submarine threat.

Since the Forties, the unimpeded flow of oil from the Persian Gulf has been identified as a vital interest to the Western World.[55] This was seriously

threatened by the war between two Persian Gulf states, Iran and Iraq. Both belligerents began attacks on each other's shipping. This soon spread to friendly and neutral shipping in an attempt by both sides to internationalize the conflict.[56]

The attacks were conducted by missile carrying planes, shore based anti-ship missiles, gunboats and mines. Occasionally the Iranian Navy would stop and board a vessel for inspection, often bringing it into an Iranian port for confiscation of the cargo. Between 1984 and 1987 a total of 340 ships were attacked.[57]

Initially, the countries bordering the Gulf tried to keep the super powers out of the region. Finally, in 1986, tiny Kuwait requested assistance. The U.S.S.R. responded in February 1987 by chartering three of its tankers to Kuwait. Later that spring, the United States agreed to reflag 11 Kuwaiti tankers and provide them escort.[58]

Eventually the United States had assembled a large patrol and escort force of over thirty ships: destroyers, frigates, and minesweepers. Outside the Gulf was a carrier task force on call. The entire Gulf was divided into sectors. Some ships patrolled these sectors like a cop on a beat; the rest escorted tankers through the Gulf.[59]

There were some interesting lessons learned from the U.S. experience. The initial lack of minesweeping capability could have been foreseen. The U.S. Navy had concentrated on building large capital ships - carriers, Aegis cruisers, SSBNs, etc. - because it expected its European allies to fill the gap in mine warfare.[60] When the allies did not come through right away, the U.S. Navy carried on, bringing its own limited assets to the Gulf. Later the allied did provide minesweepers and warships to protect their own interests. But the lack of mine warfare capability was clearly shown during the very first American escorted convoy when the SS BRIDGETON was struck by a mine.[61]

Generally, though, the American escort operations were successful in that escorted ships were not attacked. But as in previous wars, there continued to be unescorted shipping that was attacked. Plus, the geography of the Gulf meant that convoys were continually under the threat of attack from land based forces. Convoys work, but there are too many ships to be able to provide 100% protection for all ships. This can only be provided by removing the threat, as happened in August 1988 when Iran and Iraq called for a truce and ceased their attacks on shipping. This was beyond the control of the United States, as it was not officially a belligerent in the

conflict. Convoys were the only means, short of a total blockade of the belligerents, that could have provided any sort of protection to shipping.

SECTION IV

ANALYSIS

Are convoys still valid today in light of past experiences? To answer this question the following tests will be used: feasibility will answer whether the convoy mission is doable; suitability will determine if we have the required resources to complete the convoy mission; a third test will evaluate the risk involved in using convoys.[62]

FEASIBILITY. At first glance it would appear that convoy missions are still feasible today. After all, it was only a few years ago that convoys were successfully used in the Persian Gulf. However, in order to develop this particular test for feasibilty in more detail, we shall use the familiar term METT-T (mission, enemy, troops, terrain and time). Though an Army term, it can easily be adapted to aid in analyzing this Navy operation. The feasibility of convoys depends on the conditions and parameters of the proposed operation. METT-T is the sum of those conditions.

Mission. Before starting any operation, the mission must be clearly defined. This requires that the correct objective of the campaign be clearly identified. As noted earlier, convoys have a different objective from theoretical naval warfare. Convoys are undertaken to ensure the safe and timely

arrival of the escorted ships at their next port of call. This is at odds with Mahan's stated objective, which is command of the seas by destroying enemy forces. Convoys do not aid in gaining command of the seas. Escorts which leave the convoys to destroy the commerce raiders leave the convoys unprotected.[63] Nor can forces dedicated to sweeping the sea lanes of commerce raiders be capable of providing daily routine protection to the convoys. The objective of convoys and the theoretical objective of naval warfare do not necessarily coincide. In World War II, the strategic decision was made early in the war that protecting troops and supplies heading for England was more important than gaining command of the seas. Therefore, convoys were the correct solution. In this instance, it is also true that not gaining command of the seas did not prevent the allies from conducting Operation TORCH, though it was a consideration. Later the command of the seas was won by sweeping the U-boats out of the Atlantic with Hunter-Killer groups. This was in fact a requirement for the conduct of Operation OVERLORD.[64]

The scope of the mission also influences the decision to use convoys. In the Persian Gulf, the United States was not a belligerent. Unable to strike at Iran or Iraq, the United States Navy was forced to rely upon convoys as the only means of protecting the

tankers. This was the only option available short of closing the Gulf completely.

Enemy. Correctly identifying the enemy forces is another step in determining feasibility. Today's military forces are a far cry from the old privateers in their sailing ships. Today the threat against merchant shipping includes air, surface, subsurface and mine threats. Any platform is now capable of carrying missiles and torpedos as well as guns. The threat must be properly identified so that the proper resources can be applied against it. For example, if the threat were primarily submarines, then it would be foolish to use escorts with no sonar or anti-submarine weapons.[65]

Troops. For this Army term substitute air and surface naval forces. Submarines make poor escorts. Not only is it difficult for them to communicate with merchant ships, they can provide no protection against air threats. Furthermore, submarines rely upon stealth and secrecy, attributes they would have to forfeit if they were used to protect convoys. However, a combination of air and surface forces can effectively protect convoys. In fact, World War II demonstrated that surface ships alone were unable to protect convoys. Air cover, both from land bases and aircraft carriers played a critical role in convoy operations.[66]

Since the threat may be varied, the forces used as convoy escorts must be multi-capable. They must be able to counter air, surface and sub-surface threats. If mines are a threat, minesweepers must be added to the escort.[67] If multi-capable units are not available, then the decision to use convoys must be reconsidered.

Terrain. For this term read geographic area. How big is the area through which convoys must be escorted? Is it mostly open ocean, or are there choke points close to land? Can submarines operate in these waters?

The physical scope of the operation has a great deal to do with the feasibility of convoy operations. The Persian Gulf operation was in a relatively small and shallow area. This precluded the submarine threat, as well as using carrier battle groups for ocnvoy escorts. By the same token, the Persian Gulf lends itself well to mine warfare.[68]

If the convoys were required to cover a larger route, say through the Pacific or Atlantic Ocean, this would be much harder to accomplish with the forces we have today. More forces would be required, and the convoys would take a longer time to reach their objective.

Time. This leads into the final condition for the feasibility of using convoys: time. A convoy

crossing the Atlantic took over ten days. A convoy in the Persian Gulf took three to five days. The longer the time involved, the fewer convoys that can be conducted given a limited number of escorts. Therefore, the shorter the transit time, the more convoys that can be protected.

The decision to use convoys may be feasible if the conditions stated here are such that it can be supported. Careful analysis of the mission, threat, resources available and scope of the operation is required before the final decision to use convoys can be made.

The feasibility of using convoys depends, therefore, upon the desired endstate as determined in the mission statement. Changing the mission may affect the feasibility of using convoys. Part of understanding the mission should include the area and time in which the convoys will be operating. A key part in determining the feasibility of using convoys is to correctly identify the threat that must be countered. This will have a direct impact upon whether or not the forces available are suitable for the mission, and leads right into the second test of suitability to determine if convoys are still valid today.

SUITABILITY. Are the forces we possess today suitable for convoy operations? The answer is yes.

The OLIVER HAZARD PERRY (FFG-7) class frigate was built primarily as a convoy escort.[69] There are fifty-two currently in service in the Navy.[70] These ships, along with the SPRUANCE (DDG-963) class destroyer, were the primary escorts for convoys in the Persian Gulf.

What is a frigate? It is a "ship for open-ocean operations in the protection of shipping, specifically convoy and amphibious shipping."[71] It is capable of conducting anti-surface, anti-submarine and anti-air warfare. Modern frigates are larger than World War II destroyers, but are not suitable for carrier battle group operations, though they are often seen in this role in peacetime. Their low-tech weapon and sensor systems, coupled with their low manning, make it difficult to integrate the frigates with the carrier battle groups high tech equipment in a high intensity environment.[72]

In testimony to Congress concerning the future of the Navy, VADM John Nyquist, then DCNO for Surface Warfare, provided information concerning future surface combatant requirements.[73] He identified two missions: battle force combatants (BFC) and protecting of shipping ships (POS). BFC ships will be modern and multi-capable. As they age, they will transition down to the less demanding role of POS ship. This means that in the next twenty years, under

this plan, SPRUANCE class destroyers and TICONDEROGA class cruisers will be downrated to POS type ships. This less demanding role will mean that these ships might have their life extended to 40 years, vice the usual 25-30 years.[74]

We can see by this testimony that the Navy has identified direct protection of shipping by convoys to be a major mission for it, and is planning accordingly. However, this was based upon a 600-ship Navy. With the possibility of the Navy dwindling down to an estimated 450 ships the future is not bright.[75] It is unlikely that ship procurement will continue at a pace that can support an adequate number of both BFC and POS ships. In that case, it is likely that older ships will not be downrated to POS, but to retrofitted with technological updates to maintain their BFC status.

The answer to this test is that today the U.S. Navy has suitable forces for convoy operations. This answer may change in the near future given the inevitability of defense budget cuts.

RISK. Is the risk of using convoys worth the cost in terms of possible losses? By assigning escorts to convoys, there is a corresponding loss in capability to gain command of the seas. We have seen in World War II where this loss was acceptable, as it was more than offset by the decreased losses in

merchant shipping. Plus, as has been already noted, the lack of command of the seas did not stop land operations such as Operation TORCH.

Again in the Persian Gulf, we see that acceptability of risk was not an issue. There was no viable option to escorting the tankers, since the United States was not a belligerent in the war in the Gulf. Command of the seas was not at stake here, but protecting commerce was.

However, in a future conflict, with a different enemy, there may be a problem. A war with the Soviet Union, for example, may require a different answer than convoys. The Soviet Fleet is the only fleet capable of directly attacking the United States and disputing the command of the seas. The risk of losing command of the seas in such a scenario may be greater than the risk of losing merchant ships.

There is no set answer to whether convoys should or should not be employed in every conflict. It depends upon the conditions of the situation. If the conditions are favorable, the use of convoys is a feasible decision. The forces the United States has today are suitable for the convoy mission. The level of risk in convoy operations is understood and planned for in current doctrine and force structure.

SECTION V

CONCLUSIONS AND IMPLICATIONS

Convoy operations are not obsolete and are very relevant today. Despite the influence of Mahan, Corbett and classical naval theory, commerce raiding is a viable weapon in naval operational art. Therefore it is incumbent upon the United States Navy to be prepared to defend against it. It is not sufficient to say that the dominance of a battle fleet will protect commerce. We have seen in World War II that there might not be enough resources to gain command of the seas, yet commerce must still be protected. Again in the Eighties, command of the seas was not the issue; the protection of the tankers in the Persian Gulf was.

Given the right conditions and resources, convoy operations are entirely feasible, suitable and possess an acceptable level of risk for the United States Navy. Current force structure reflects that the Navy recognizes this as an appropriate role and will continue to do so in the foreseeable future.

The missions of the United States Navy may change, however, as the force structure of the Navy changes. The future defense budget cuts may reduce the Navy by as many as 100 ships. Where these cuts take place will affect the Navy's capability to protect shipping.

Currently the low tech frigates are assigned POS roles, while the high tech carriers and cruisers are assigned the BFC mission. The Navy has decided to build a single class of multi-mission surface combatants for the next twenty years. This is the ARLEIGH BURKE (DDG-51) class, an AEGIS guided missile destroyer.[76] This is definitely in the high end of the technological spectrum. This implies that the BFC role will take precedence over the POS role. As ship numbers are reduced, it is unlikely that the current AEGIS cruisers will be downgraded to the POS role, but will be upgraded through technological improvements to keep them current.

The Maritime Strategy will have to be reevaluated. Written as a justification for the 600 ship Navy, it cannot be used in its current form with a Navy of only 450 ships. The two surface roles, BFC and POS, will have to be prioritized. The threat will have to be identified; then the feasibility of the decision to use convoys will have to be evaluated using METT-T. In any event, the Maritime Strategy of the next century will likely look a lot different from the one in the Eighties. Convoys may play a larger role in the new strategy, particularly if Congress does not buy more of the expensive ARLEIGH BURKE destroyers.

The role of the reserves for convoy missions may have to be improved. This low tech role may be a perfect mission for reserve forces, since many frigates are entering the Naval Reserve.[77] This is an achievable mission for the Reserves.

The final implication for future operations is that Navy officers will have to change their thinking about naval warfare. The true objective may not be the controlling of sea lanes; it may be that protecting commerce directly is more important. Historically, this would mean that we have come full circle, and are embracing eighteenth century naval theory.

ENDNOTES

[1] Alfred Thayer Mahan, in a speech to the Naval War College, Class of 1882. Philip A. Crowl's article "Alfred Thayer Mahan: The Naval Historian," in Makers of Modern Strategy from Machiavelli to the Nuclear Age, Peter Paret, ed. (Princeton, NJ: Princeton University Press, 1986), 472.

[2] Ronald Spector, "The Triumph of Professional Ideology: The U.S. Navy in the 1890's," In Peace and War: Interpretations of American Naval History, 1775-1984, 2d ed., Kenneth J. Hagan, ed. (Westport, CN: Greenwood Press, 1984), 175.

[3] John Lehman, Command of the Seas: Building the 600 Ship Navy (New York: Charles Scribner's Sons, 1988). John Lehman was the Secretary of the Navy from 1891 to 1987, and was instrumental in the naval buildup during those years. His rallying cry was to build a navy of at least 600 ships. His goal was never acchieved, though when he left office it still seemed possible.

[4] Department of the Navy, Naval Warfare Publication 1(A), Strategic Concepts of the U.S. Navy (Washington, D.C.: 1978), 1-3-1. Despite its age this is still the most current revision of this publication.

[5] Herbert Rosinski, The Development of Naval Thought: Essays by Herbert Rosinski, intro. by B. Mitchell Simpson, III, ed. (Newport, RI: Naval War College Press, 1977), 26. Herbert Rosinski was a noted naval and military scholar who, in the Thirties and Forties, wrote extensively on Mahan, Corbett and other naval theorists. His writings are considered critical to understanding these theorists' influence on today's Navy.

[6] Sir Julian Corbett, Some Principles of Maritime Strategy, intro. and notes by Eric J. Grove (Annapolis, MD: Naval Institute Press, 1988), 94.

[7] Wayne P. Hughes, CAPT, USN (RET), FLEET TACTICS: Theory and Practice (Annapolis, MD: Naval Institute Press, 1986), 11. CAPT Hughes is a respected naval scholar currently teaching at the Naval Post Graduate School, Monterey, CA. This important book is one of the few modern books on the subject of fleet tactics, which could be considered the naval equivalent of operational art.

[8] Ibid.

[9] Ibid., 229.

[10] Corbett, 91.

[11] Lance C. Buhl, "Maintaining 'An American Navy,' 1865-1889," In Peace and War, Kenneth J. Hagan, ed., 145-173.

[12] Theodore Ropp, "Continental Doctrines of Sea Power," Makers of Modern Strategy from Machiavelli to Hitler, Edward Mead Earle, ed. (Princeton, NJ: Princeton University Press, 1943), 446-456.

[13] Ronald Spector, "The Triumph of Professional Ideology: The U.S. Navy in the 1890's," In Peace and War, Kenneth J. Hagan, ed., 433.

[14] Discussion with Dr. Robert Epstein, Director of Military History, School of Advanced Military Studies, Ft. Leavenworth, KS on 28 March 1991.

[15] Margaret Tuttle Sprout, "Mahan: Evangelist of Sea Power," Makers of Modern Strategy from Machiavelli to Hitler, Edward Mead Earle, ed. (Princeton, NJ: Princeton University Press, 1943), 433.

[16] Ibid., 436.

[17] John Terraine, THE U-BOAT WARS, 1916-1945 (New York: G. P. Putnam's Sons, 1989), 413-414. This author did try to sell convoys as an offensive rather than a defensive measure. This was an unconvincing argument in an otherwise excellent book.

[18] Crowl, 444-477.

[19] Ibid., 455.

[20] Corbett, 45.

[21] Ibid., 91.

[22] Ibid., 99.

[23] Ibid., 167.

[24] Terraine, p. 423. The Americans initially based their trade defense on patrolling the sea lanes, conducting anti-submarine sweeps and independent routing of ships. This was in keeping with their

offensively oriented attitudes: it was more glorious to find and fight the enemy than play nursemaid to a bunch of merchants. It took a maverick such as ADM King, CNO and COMINCH, to move the Navy towards convoys. He wrote to Gen Marshall: "The submarines can only be stopped by wiping out the German building yards and bases.... But if all shipping can be brought under escort and air cover our losses will be reduced to an acceptable level. I might say in this connection that escort is not just one way of handling the submarine menace; it is the only way that gives any promise of success. The so-called patrol and hunting operations have time and again proved futile." However, King ran into initial resistance to convoys. His acerbic and overbearing manner forced the issue through.

[25] Crowl, 473.

[26] Rosinski, 56.

[27] Terraine, 264.

[28] Rosinski, x. The complete list is geographical position, physical conformation, extent of terriroty, number of population, character of population, and the character of the government.

[29] Terraine, 766.

[30] John Winton, CONVOY: The Defence of Sea Trade 1890-1990 (London: Michael Joseph Ltd., 1983), 9-14. Convoys had been firmly established as a means of providing maximum protection. Marine Insurance underwriters such as Lloyds of London would offer discounted premiums to ships in convoy, sometimes 30-40% of ships sailing alone. In 1798, the British passed an act which gave the Admiralty the power to enforce the convoy system for all ocean going ships. See also Terraine, 50.

[31] Ibid., 12.

[32] Ibid., 87. By World War Two there was no fixed size for a convoy, though there was an inclination to keep them as small as possible. Operational research later in the war showed that larger convoys were more practical. In any event, convoys were unwieldy and difficult to protect. Merchant skippers were notorious for not keeping proper station or listening to the escort commander. A convoy of 45 ships could cover 5 square miles at sea. This gives some idea of the difficulty facing

the escort commander: how should he place his escorts to give maximum protection from an unseen enemy?

[33] Ibid.

[34] Ibid.

[35] Winton, 4. In 1913, ADM Lord Fisher, RN, wrote: "...Barbarous and inhuman as...it may appear, if the submarine is used at all against commerce, she must sink her captures...." This was impossible for naval officers of the day to accept. Churchill, then First Lord of the Admiralty, responded that he did not "believe this would ever be done by a civilized Power," 5.

[36] Ibid., 18-20.

[37] Rosinski, 7.

[38] Terraine, 204. The Z-Plan was a long-term procurement plan started in 1935 to build a "balanced" Germany navy. An ambitious plan, it was not completed when hostilities started.

[39] Ibid., 768-769.

[40] John Major, "The Navy Plans for War, 1937-1941," In Peace and War, Kenneth Hagan, ed., 258. This was all part of Roosevelt's plan to ease the Americans into the war. He was looking for a significant incident that he could blame on the Germans and use as an excuse to declare war.

[41] Ibid., 241. Not an unreasonable goal, given the situation in the Pacific.

[42] Marc Milner, "The Battle of the Atlantic," in Decisive Campaigns of the Second World War, John Gooch, ed. (Portland, OR: Frank Cass and Company, Ltd., 1990), 54. The Canadians should not be given a bad rap here. They did a magnificent job. But in the beginning they were not equipped nor trained well for convoy operations. The Americans also learned this lesson, and began to centralize their command and control as well as their convoy doctrine.

[43] Ibid., 46-52.

[44] Samuel Eliot Morison, The Two-Ocean War: A Short History of the United States Navy in the Second World War (Boston, MA: Little, Brown and Company, 1963) 131-132. RADM Morison was the official historian for the Navy. The Hooligan Navy did not

accomplish much, but it did demonstrate that the Americans were willing to improvise.

[45] Ibid., 272.

[46] Robert William Love, Jr., "Fighting a Global War, 1941-1945," in In Peace and War, Kenneth Hagan, ed., 272.

[47] Terraine, 353. In November, 1941, for example, for every two convoys attacked there were twenty that went unmolested.

[48] Ibid., 423.

[49] Ibid., 580.

[50] Morison, 370.

[51] R. W. Love, 272.

[52] Terraine.

[53] Robert F. Dunn, VADM, USN, (RET), "Power Projection: Back on Top, But...," Naval Institute Proceedings, February 1991, 13. VADM Dunn was Assistant Chief of Naval Operations, Air Warfare (OP-05) when he retired in 1989.

[54] James Watkins, ADM, USN. "The Maritime Strategy," supplement to the Naval Institute Proceedings, January 1986. ADM Watkins was the Chief of Naval Operations when the Maritime Strategy was articulated, and is considered one of its major architects.

[55] Wesley L. McDonald, ADM, USN (RET), "The Convoy Mission," Naval Institute Proceedings, Naval Review Issue, 1988, 36-44. When ADM McDonald retired he was CINCLANT and SACLANT.

[56] Ronald O'Rourke, "The Tanker War," Naval Institute Proceedings, Naval Review Issue, 1988, 30-34.

[57] Ibid.

[58] C. W. Koburger, Jr., "The US Navy in the Arabian Gulf," Navy International, October 1990, 339-342.

[59] Ibid.

[60] McDonald, 39.

[61] Frank Seitz, Jr., CAPT, U.S. Merchant Marine, "SS Bridgton: The First Convoy," Naval Institute Proceedings, Naval Review Issue, 1988, 52-57.

[62] AFSC Pub 1, The Joint Staff Officer's Guide, 6-25. These terms are used as tests for courses of action in the deliberate planning process. They have been slightly modified for this analysis.

[63] Terraine, 135. Therefore, convoys were not killing U-boats. During 1942, only 21 U-boats were sunk, while the Germans were able to build 123.

[64] Ibid., 495. The biggest problem with the Operation TORCh from a convoy viewpoint was that the invasion forces required extensive escort forces of their own. This reduced the number of escorts available for regular convoys. The Battle of the Atlantic was considered by GEN Marshall a critical operation for the success of OVERLORD. It is unclear from a naval viewpoint why TORCH could proceed but OVERLORD required the defeat of the Germans on the seas.

[65] The aforementioned 'Hooligan Navy' of the U.S. Coast Guard is a prime example. These transformed yachts and small harbor craft were inadequate to the task; but there was nothing else available at the time. This force was also referred to as the 'Donald Duck Navy.' Ships assigned to the Persian Gulf tanker escort duty were supposed to have AAW capability as well as NTDS (Naval Tactical Data System). Most ships did, but a few Knox class frigates without these tools were assigned to the Persian Gulf. Sometimes the resources are not available to fill all requirements.

[66] Terrain, 442.

[67] Seitz, "SS Bridgton: The First Convoy."

[68] As a point of interest, mines are not the exclusive weapon of the commerce raiders. In World War I and II the British used mines to bottle up the German fleet and to control the access to the sea by the Germans.

[69] Joseph Metcalf, VADM, USN (RET), "Frigates: Quo Vaids?" Naval Institute Proceedings, Naval Review Issue, 1988, 68-72. VADM Metcalf was the DCNO for Surface Warfare when he retired.

[70] David Miller and Chris Miller, Modern Naval Combat (New York: Crescent books, 1986), 136.

[71] VADM Metcalf, "Frigates: Quo Vadis?"

[72] Ibid.

[73] James L. George, "The USNs Revolution at Sea: Building CRUDESATES," Navy International, October 1990, 378-383.

[74] Ibid.

[75] There are many guesses concerning how the Navy will fare with the budget cuts. A reduction to 450 ships is not the worse case, but is extremely possible.

[76] James L. George, "The USNs Revolution at Sea."

[77] The Knox (FF-1052) class frigates will be either decommissioned or placed in the Reserve Force. Many Pery class frigates are also placed in the Reserves. Placing new ships such as the Perry class frigate in the Reserves was unpopular with Congress, but it an indication of the commitment of the Navy to modernizing the Reserve forces.

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